

REMARKS

In the first full paragraph on page 87 of the specification, "light-emitting device" has been corrected to "electron-emitting device".

Claims 41, 99, and 319 have been amended. Claims 4, 5, 8, 18 - 21, 23 - 25, 33, 34, 44 - 56, 59 - 69, 71 - 74, 76, 77, 85 - 96, 100 - 113, 115 - 126, 267, 271 - 280, 282 - 288, 290 - 309, 311 - 318, and 320 - 364 have been canceled. Claims 365 - 368 have been added. Accordingly, Claims 1 - 3, 6, 7, 10 - 17, 22, 26 - 32, 35 - 41, 57, 58, 84, 97 - 99, 114, 266, 281, 289, 310, 319, and 365 - 368 are now pending.

Claims 41, 46, 50, 57, 58, and 61 have been rejected under 35 USC 102(b) as anticipated by Clerc, U.S. Patent 5,786,660. This rejection is respectfully traversed in view of the revisions to the claims.

Clerc discloses a flat-panel cathode-ray tube ("CRT") display formed with electron-emitting device 1 and oppositely situated light-emitting device 5. Referring to Fig. 3 of Clerc, electron-emitting device (or cathode) 1 consists of flat glass substrate 10, overlying resistive layer 11 (labeled in Fig. 1), an array of rows and columns of groups of conical electron-emissive elements 2, dielectric layer 24, gate 3 (labeled in Fig. 1) arranged in rows 15, insulating plate 13, and metallization 21. Each group of electron-emissive elements 2 lies on a portion of resistive layer 11. Dielectric layer 24 has openings in which the groups of electron-emissive elements 2 are located. Gate 3 lies on dielectric layer 24 and has holes 4 (labeled in Fig. 1) through which electron-emissive elements 2 are respectively exposed.

Insulating plate 13 is situated on rows 15 of gate 3 and has holes 14 located directly above the openings in dielectric layer 24. Metallization 21 lies on insulating plate 13 and has openings that respectively match holes 14 in insulating plate 13. Each group of electron-emissive elements 2 is thereby exposed through (a) holes 4 in the overlying part of gate 3, (b) overlying hole 14 in insulating plate 13, and (c) the overlying opening in metallization 21.

Clerc discloses at col. 4 that metallization 21 acts as a focusing gate to focus electrons emitted by electron-emitting device (cathode) 1, i.e., to focus electrons emitted by electron-emissive elements 2. At col. 5, Clerc discloses that metallization 21 acts as a getter in one embodiment and, for this purpose, consists of a suitable (gettering) material such as barium.

Clerc discloses that aperture 22 (labeled in Fig. 2) is provided near the periphery of insulating plate 13 to receive getter 23 in another embodiment. As indicated in Fig. 3, getter

23 appears to contact part of gate 3, i.e., one or more rows 15 of gate 3, to the side of the active electron-emitting portion occupied by electron-emissive elements 2. In any event, getter 23 is situated above an opening that extends through dielectric layer 24 and substrate 10 down to pumping tube 19.

Light-emitting device (or anode) 5 consists of glass substrate 6, overlying transparent electrodes 9, insulating material 8, and strips of light-emissive phosphor elements 7 situated on electrodes 9 and separated from one another by insulating material 8. Each group of electron-emissive elements 2 is situated opposite three light-emissive elements 7, one (7r) for red light, another (7b) for blue light, and the third (7g) for green light. Spacer beads 20 are sandwiched between light-emissive elements 7 and metallization to maintain a constant spacing between light-emitting device 5 and electron-emitting device 1 connected together along their peripheries by sealing joint 18.

Independent Claim 41 has been amended to include the further limitations of dependent Claims 46 and 50, now canceled, that the support region comprises a base focusing structure of an electron-focusing system for focusing electrons emitted by the electron-emissive element and that the electron-focusing system include an electrically non-insulating focus coating situated over at least part of the base focusing structure and under at least part of the getter region. Inasmuch as reference to the support structure thereby becomes superfluous in Claim 41, the recitation of the support structure has been deleted from Claim 41 in order to simplify its wording. The elements of Claim 41 have also been arranged in a more logical order.

Claim 41, as amended, recites:

41. A structure comprising:
 - a plate;
 - an electron-emissive element overlying the plate;
 - an electron-focusing system for focusing electrons emitted by the electron-emissive element, the electron-focusing system comprising an electrically non-insulating focus coating overlying the plate; and
 - a getter region overlying at least part of the focus coating, a composite opening extending through the getter region and the focus coating generally laterally where the electron-emissive element overlies the plate, the composite opening comprising (a) an opening through the getter region and (b) an opening through the focus coating.

Claim 41 now requires that a getter region overlie at least part of an electrically non-insulating focus coating of an electron-focusing system where "electrically non-insulating" means electrically conductive or/and electrically resistive. Consequently, Claim 41 covers the embodiment of application Figs. 19 and 20 in which getter region 112 lies on focus coating 110 situated on base focusing structure 108.

With regard to Claim 50, now canceled, whose further limitation is incorporated into amended Claim 41, the Examiner alleges on page 4 of the Office Action that "Fig. 3 of Clerc shows the electron-focusing system including an electrically non-insulating focus coating (15) situated over at least part of the base focusing structure and under at least part of the getter region". Item 15 in Fig. 3 of Clerc identifies the rows of gate (electrode) 3 and does not focus, or assist in focusing, electrons emitted by electron-emissive elements 2. Hence, item 15 in Clerc was not the focus coating of Claim 50 and is not the focus coating of amended Claim 41.

Metalization 21 in Clerc's display can perform both gettering and electron-focusing functions. Unlike what is required in Claim 41, metallization 21 is not configured as a focus coating and a getter region that overlies at least part of the focus coating. Accordingly, Clerc does not anticipate amended Claim 41.

Nothing in Clerc would provide a person skilled in the art with any motivation or incentive for configuring an electron-emitting device so that a getter region overlies at least part of an electrically non-insulating focus coating of an electron-focusing system. Claim 41 is therefore patentable over Clerc.

Claims 57 and 58 both depend (directly or indirectly) from Claim 41. As a result, dependent Claims 57 and 58 are patentable over Clerc for the same reasons as Claim 41.

Turning momentarily to allowed independent Claim 319, it was initially basically an extension of Claim 41 to the situation in which there are multiple laterally separated electron-emissive regions subject to the additional limitation that material of the getter region overlie "the support region above locations between pairs of adjacent electron-emitting regions" where "electron-emitting regions" should have read "electron-emissive regions".

In order to better differentiate Clerc, Claim 319 has been amended in a similar manner to Claim 41 to include the further limitations of dependent Claims 323 and 327, now canceled, that the support region comprise a base focusing structure of an electron-focusing

system for focusing electrons emitted by the electron-emissive regions and that the electron-focusing system include an electrically non-insulating focus coating situated over at least part of the base focusing structure and under at least part of the getter region. As with Claim 41, the reference to the support structure becomes superfluous in Claim 319. The recitation of the support structure has therefore been deleted from Claim 319 to simplify its wording. In particular, references to the "support structure" have generally been changed to the "focus coating". The elements of Claim 319 have also been arranged in a more logical order.

Claim 319, as amended, recites:

319. A structure comprising:
 - a plate;
 - a multiplicity of laterally separated electron-emissive regions overlying the plate;
 - an electron-focusing system for focusing electrons emitted by the electron-emissive regions, the electron-focusing system comprising an electrically non-insulating focus coating overlying the plate; and
 - a getter region overlying at least part of the focus coating, a multiplicity of composite openings extending through the focus coating and the getter region generally laterally where the electron-emissive regions overlie the plate, each composite opening comprising (a) an opening through the getter region and (b) an opening through the focus coating such that material of the getter region overlies the focus coating above locations between pairs of adjacent electron-emissive regions.

As with Claim 41, Claim 319 now requires that a getter region overlie at least part of an electrically non-insulating focus coating of an electron-focusing system. Clerc fails to meet or suggest this requirement for the reasons presented above in connection with Claim 41. Claim 319 is thereby patentable over Clerc.

New independent Claim 365, repeated below, constitutes original Claim 61, now canceled, subject to the additional limitation that the getter region be thicker than the insulating layer situated between the getter region and the control electrode:

365. A structure comprising:
 - a plate;
 - an electron-emissive element overlying the plate;

a control electrode for selectively extracting electrons from the electron-emissive element or for selectively passing electrons emitted by the electron-emissive element, the control electrode overlying the plate;

a getter region extending over the control electrode above the plate: and

an electrically insulating layer situated between the getter region and the control electrode so as to separate the getter region and the control electrode, the getter region being thicker than the insulating layer, a composite opening extending through the getter region and the control electrode generally laterally where the electron-emissive element overlies the plate, the composite opening comprising (a) an opening through the getter region and (b) an opening through the control electrode.

With respect to Claim 61, the Examiner states on page 5 of the Office Action that "Fig. 3 of Clerc shows a structure comprising . . . a control electrode (15) . . . and a getter region (21) overlying at least part of the control electrode and contacting, or connected by directly underlying electrically insulating material (13), to the control electrode".

For (at least) the situation in which metallization 21 in Clerc performs a gettering function, metallization 21 analogized by the Examiner to the getter region of Claim 61 is much thinner than Clerc's insulating plate 13 analogized by the Examiner to the insulating layer of Claim 61. In col. 5, Clerc specifies that insulating plate 13 has a thickness of 0.2 - 2 mm and that metallization 21 is approximately 50 μm thick when acting as a getter. Hence, metallization 21 is no more than one fourth as thick as insulating plate 21 when metallization 21 functions as a getter.

Clerc does not meet the requirement of Claim 365 that the getter region be thicker than the insulating layer situated between the getter region and the control electrode. Consequently, Claim 365 is not anticipated by Clerc.

Nothing in Clerc would provide a person skilled in the art with any suggestion or motivation for configuring an electron-emitting device, such as that used in a flat-panel CRT display, so that a reflective getter coating overlying an insulating layer directly above control electrode of the electron-emitting device is thicker than the insulating layer. Hence, Claim 365 is patentable over Clerc.

Claims 366 - 368 all depend (directly or indirectly) from Claim 365. Accordingly, dependent Claims 366 - 368 are patentable over Clerc for the same reasons as Claim 365.

Clerc does not disclose or suggest the further limitation of dependent Claim 366 that the getter region be "at least twice as thick as the insulating layer". Nor does Clerc disclose or suggest the further limitation of dependent Claim 367 that the getter region be "at least twenty times as thick as the insulating layer". Claims 366 and 367 are therefore separately patentable over Clerc.

In order to better differentiate Clerc, allowed independent Claim 99 has been revised to incorporate the further limitation of dependent Claim 277, now canceled, that the getter region be exposed through or/and situated in at least one other primary opening in the raised section. As so amended, Claim 99 recites:

99. A structure comprising:
 - a plate;
 - a group of electron-emissive elements overlying the plate;
 - a group of laterally separated control electrodes for selectively extracting electrons from the electron-emissive elements or for selectively passing electrons emitted by the electron-emissive elements, the control electrodes overlying the plate;
 - a raised section overlying the plate and extending over at least part of each control electrode; and
 - a getter region overlying the plate and exposed through or/and situated in a plurality of primary openings in the raised section.

Due to the revision, Claim 99 requires that the getter region be "exposed through or/and situated in a plurality of primary openings in the raised section". Clerc does not meet or suggest this requirement. Consequently, Claim 99 is patentable over Clerc.

The allowance of Claims 1 - 3, 6, 7, 10 - 17, 22, 26 - 30, 31, 32, 35 - 40, 84, 97, 98, 266, 281, 289, and 310 is noted.

In short, Claims 41, 57, 58, and 365 - 368 have been shown to be patentable over Clerc. Allowed Claims 99 and 319 have been amended to better differentiate them from Clerc and remain allowable. Accordingly, Claims 41, 57, 58, and 365 - 368 should be allowed along with already allowed Claims 1 - 3, 6, 7, 10 - 17, 22, 26 - 30, 31, 32, 35 - 40, 84, 97 - 99, 114, 266, 281, 289, 310, and 319 so that the application may proceed to issue.

Please telephone Attorney for Applicant(s) at 650-964-9767 if there are any questions.

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